Notice of Allowability	Application No.	Applicant(s)
	10/530,582	JACKSON, DAVID B.
	Examiner	Art Unit
	JENNIFER N. TO	2195

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *communication filed 06/15/2010 and telephone interviewed 02/08/2011*.

2. ☒ The allowed claim(s) is/are *1-3,5-6, 8-33 and 36-41, now renumbered as 1-37*.

3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

   Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
   THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)	5. ☐ Notice of Informal Patent Application
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)	6. ☒ Interview Summary (PTO-413), Paper No./Mail Date *attached hereto* .
3. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date See Continuation Sheet	7. ☒ Examiner's Amendment/Comment
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material	8. ☒ Examiner's Statement of Reasons for Allowance
	9. ☐Other _____.
	/Jennifer N. To/ Patent Examiner, AU 2195

Continuation of Attachment(s) 3. Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date: 07/20/2010; 01/12/2011; 01/26/2011.

EXAMINER'S COMMENT

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 06/15/2010 has been entered.

EXAMINER'S AMENDMENT

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

3. Authorization for this examiner's amendment was given in a telephone interview with Mr. Thomas M. Isaacson, Registration No. 44,166 on 02/08/2011.

4. Paragraph [0002] of the specification had been amended as:

[0002] The present application is related to ~~Attorney Docket Numbers 010-0011, 010-0011B, 010-0011C, 010-0013, 010-0019, 010-0026, 010-0028 and 010-0030~~ U.S. Patent Application No. 10/530,583; U.S. Patent Application No. 10/530,581; U.S. Patent Application No. 10/530,577; U.S. Patent Application No. 10/530,576; U.S. Patent Application No. 10/589,339; U.S. Patent Application No. 10/530,578; and U.S. Patent Application No.

10/530,580, U.S. Patent Application No. 10/530,575, filed on the same day as the present application. The ~~contents~~ content of each of these cases is incorporated herein by reference.

5. The claims had been amended as the following:

Claim 1. (Currently Amended) A method of co-allocating resources within a compute environment, the method comprising:

receiving a first request for a reservation for a first type of resource in a compute environment comprising a plurality of networked computing devices;

analyzing first constraints and service level agreement guarantees associated with the first request, the first constraints and guarantees related to use of the ~~plurality of networked computing devices within the~~ compute environment;

identifying a first group of resources that meet the first request;

receiving a second request for a reservation for a second type of resource in the compute environment;

analyzing second constraints and service level agreement guarantees associated with the second request, the second constraints and service level agreement guarantees related to use of ~~the plurality of networked computing devices within~~ the compute environment, wherein the first type of resource and second type of resource span at least one computing device of the plurality of networked computing devices, wherein each computing device of the plurality of networked computing devices has a ~~one or more servers each having a~~ homogeneous processor architecture;

identifying a second group of resources that meet the second request; and

generating a co-allocation map between the first group of resources and the second group of resources, wherein the co-allocation map comprises at least one of (1) intersecting time frames in which both the first request and the second request may be simultaneously satisfied, and (2) all time frames where available resources exist that satisfy the first request and the second request.

Claim 2. (Currently Amended) The method of claim 1, further comprising reserving resources according to the ~~generated~~ co-allocation map.

Claim 3. (Original) The method of claim 1, wherein generating the co-allocation map comprises identifying a reduced map of quantities of resources that can simultaneously satisfy the first request and the second request.

Claim 4. (Canceled)

Claim 5. (Currently Amended) The method of claim 1, wherein the first and second types of resources comprise at least one of: compute resources, disk storage resources, network bandwidth resources, memory resources, and licensing resources.

Claim 6. (Currently Amended) The method of claim 1, wherein generating the co-allocation map further comprises identifying an intersection of [[the]] an availability of each of the first type of resource and the second type of resource.

Claim 7. (Canceled)

Claim 8. (Currently Amended) The method of claim [[7]] 1, further comprising: generating a resulting array of events describing the intersecting time frames.

Claim 9. (Original) The method of claim 8, wherein the resulting array of events comprises at least one of resource quantity, resource quality, time frames, quality of information and cost.

Claim 10. (Currently Amended) The method of claim 1, wherein the first request and the second request comprise at least one of: a job description, at least one time frame availability, a description of minimum resources, a description of resource types and attributes, and a reservation duration minimum.

Claim 11. (Original) The method of claim 1, wherein identifying the first group of resources and the second group of resources further comprises analyzing events associated with the first request and the second request and how resource availability changes over time.

Claim 12. (Currently Amended) The method of claim 11, wherein the events comprise at least one of job start, job completion, state change, boundaries, reservations, and policy enforcement limits.

Claim 13. (Original) The method of claim 1, further comprising reporting at least one of the following parameters associated with the identified first and second group of resources: cost, quality of information data, resource quantity data, time frame data, and resource quality data.

Claim 14. (Original) The method of claim 1, further comprising reporting at least one of the following parameters associated with the identified first and second group of resources: cost, quality of information data, resource quantity data, time frame data, and resource quality data.

Claim 15. (Original) The method of claim 14, further comprising:

performing again, under constraints identified by the co-allocation map, the step of identifying a second group of resources that meet the request for the second type of resource.

Claim 16. (Original) The method of claim 1, wherein:

receiving a request for a reservation for a first type of resource further comprises receiving a request for the first type of resource for a first time frame, and wherein the identifying and analyzing steps for the first type of resource take into account the first time frame;

receiving a request for a reservation for a second type of resource further comprises receiving a request for the second type of resource for a second time frame, wherein the identifying and analyzing steps for the second type of resource take into account the second time frame; and

generating the co-allocation map between the first group of resources and the second group of resources further comprises calculating an intersection of the first time frame and the second time frame.

Claim 17. (Currently Amended) The method of claim 1, wherein constraints of the first ~~and~~ constraints, the second constraints and the service level agreement guarantees are at least one of resource matching in terms of type, attribute or quantity.

Claim 18. (Currently Amended) The method of claim 1, wherein the first ~~and~~ constraints, the second constraints and the service level agreement guarantees associated with the first request and the second request relate to resource-based policies.

Claim 19. (Currently Amended) The method of claim 1, wherein the first ~~and~~ constraints, the second constraints and the service level agreement guarantees associated with the first request and the second request relate to time-based policies.

Claim 20. (Original) The method of claim 19, wherein the time-based policies limit requestors to a pre-determined quantity of resources at any given moment in time.

Claim 21. (Original) The method of claim 1, wherein receiving a request for a reservation for a first type of resource further comprises receiving a request for a reservation for the first type of resource having an attribute.

Claim 22. (Original) The method of claim 21, wherein the attribute is at least one of disk storage space, memory, license scope, network bandwidth capability, clock speed and central processing power.

Claim 23. (Original) The method of claim 1, wherein the co-allocation map is computed as one of an intersection, a union or a distinct response.

Claim 24. (Original) The method of claim 23, further comprising, before reserving compute resources, presenting to a requestor of a reservation of the first and second type of resources an analysis of the compute resources and a possible reservation.

Claim 25. (Currently Amended) The method of claim 24, wherein the presented analysis relates to a quantity and quality of the compute resources in relation to [[the]] a request for a reservation for resources.

Claim 26. (Original) The method of claim 25, further comprising:

receiving from the requestor of a reservation a revised request for resources based on the presented analysis.

Claim 27. (Currently Amended) The method of claim 23, wherein a requestor may select that generating the co-allocation map returns an analysis according to at least one of the ~~interaction~~ intersection, union or distinct response.

Claim 28. (Currently Amended) The method of claim 27, wherein the analysis returned to the requestor, according to at least one of the ~~interaction~~ intersection, union or distinct response, corresponds to an analysis of the quantity of resources and a degree of fulfillment of the first request and the second request according to available resources.

Claim 29. (Currently Amended) The method of claim 28, wherein the analysis returned to the requestor further comprises a list of resources that can fulfill the first request and the second request ~~of the requestor~~.

Claim 30. (Original) The method of claim 28, wherein the analysis returned to the requestor further comprises a transaction ID associated with the analysis.

Claim 31. (Currently Amended) The method of claim 30, further comprising presenting to the requestor an option to submit the first request and the second request with reference to the transaction ID.

Claim 32. (Currently Amended) A method of claim 1, wherein the ~~generated~~ co-allocation map represents a set of resources associated with at least one of the first request or the second request.

Claim 33. (Currently Amended) The method of claim 32, wherein the first request specifies exclusivity of [[the]] a set of reasons for the first request.

Claims 34 through 35 (Canceled)

Claim 36. (Currently Amended) A system for co-allocating resources within a compute environment, the system comprising:

a processor;

means that controls the processor to receive a first request for a reservation for a first type of resource in a compute environment comprising a plurality of networked computing devices;

means that controls the processor to analyze first constraints and service level agreement guarantees associated with the first request, the first constraints and service level agreement guarantees related to use of ~~the plurality of networked computing devices within~~ the compute environment;

means that controls the processor to identify a first group of resources that meet the request for the first type of resource;

means that controls the processor to receive a second request for a reservation for a second type of resource in the compute environment~~, wherein the first type of resource and second type of resource span one or more servers each having a homogeneous processor architecture~~;

means that controls the processor to analyze second constraints and service level agreement guarantees associated with the second request, the second constraints and service level agreement guarantees related to use of the plurality of networked computing devices within the compute environment, wherein the first type of resource and second type of resource span at least one computing device of the plurality of networked computing devices, wherein each

computing device of the plurality of networked computing devices has a homogeneous processor architecture;

means that controls the processor to identify a second group of resources that meet the request for the second type of resource; and

means that controls the processor to generate a co-allocation map between the first group of resources and the second group of resources, wherein the co-allocation map comprises at least one of (1) intersecting time frames in which both the first request and the second request may be simultaneously satisfied, and (2) all time frames where available resources exist that satisfy the first request and the second request.

Claim 37. (Currently Amended) The system of claim 36, further comprising means that controls the processor to reserve resources according to the ~~calculated~~ co-allocation map.

Claim 38. (Currently Amended) A system for co-allocating resources within a compute environment, the system comprising:

a processor;

a first module controlling the processor to receive a first request for a reservation for a first type of resource in a compute environment comprising a plurality of networked computing devices;

a second module controlling the processor to analyze first constraints and service level agreement guarantees associated with the first request, the first constraints and service level

agreement guarantees related to use of ~~the plurality of networked computing devices within~~ the compute environment;

a third module controlling the processor to identify a first group of resources that meet the request for the first type of resource;

a fourth module controlling the processor to receive a second request for a reservation for a second type of resource in the compute environment~~, wherein the first type of resource and second type of resource span one or more servers each having a homogeneous processor architecture~~;

a fifth module controlling the processor to analyze second constraints and service level agreement guarantees associated with the second request, the second constraints and service level agreement guarantees related to use of ~~the plurality of networked computing devices within~~ the compute environment, wherein the first type of resource and second type of resource span at least one computing device of the plurality of networked computing devices, wherein each computing device of the plurality of networked computing devices has a homogeneous processor architecture;

a sixth module controlling the processor to identify a second group of resources that meet the request for the second type of resource; and

a seventh module controlling the processor to generate a co-allocation map between the first group of resources and the second group of resources, wherein the co-allocation map comprises at least one of (1) intersecting time frames in which both the first request and the second request may be simultaneously satisfied, and (2) all time frames where available resources exist that satisfy the first request and the second request.

Claim 39. (Currently Amended) The system of claim 38, further comprising a module controlling the processor to reserve resources according to the ~~calculated~~ co-allocation map.

Claim 40. (Currently Amended) A non-transitory computer-readable medium storing instructions for controlling a computing device to co-allocate resources within a compute environment, the instructions causing the computing device to perform steps comprising:

receiving a first request for a reservation for a first type of resource in a compute environment comprising a plurality of networked computing devices;

analyzing first constraints and service level agreement guarantees associated with the first request, the first constraints and service level agreement guarantees related to use of ~~the plurality of networked computing devices within~~ the compute environment;

identifying a first group of resources that meet the request for the first type of resource;

receiving a second request for a reservation for a second type of resource in the compute environment~~, wherein the first type of resource and second type of resource span one or more servers each having a homogeneous processor architecture~~;

analyzing second constraints and service level agreement guarantees associated with the second request, the second constraints and service level agreement guarantees related to use of ~~the plurality of networked computing devices within~~ the compute environment, wherein the first type of resource and second type of resource span at least one computing device of the plurality of networked computing devices, wherein each computing device of the plurality of networked computing devices has a homogeneous processor architecture;

identifying a second group of resources that meet the request for the second type of resource; and

generating a co-allocation map between the first group of resources and the second group of resources, wherein the co-allocation map comprises at least one of (1) intersecting time frames in which both the first request and the second request may be simultaneously satisfied, and (2) all time frames where available resources exist that satisfy the first request and the second request.

Claim 41. (Currently Amended) The non-transitory computer-readable medium of claim 40, wherein the instructions further comprise reserving resources according to the ~~calculated~~ co-allocation map.

Claims 42 through 49 (Canceled)

6. The following is an examiner's statement of reasons for allowance:

The prior arts of record including the newly cited prior art when taken individually or in combination do not expressly teach or render obvious the limitations recited in claims 1, 36, 38, and 40, **when taken in the context of the claims as a whole**, specific to the limitations of generating a co-allocation map between the first group of resources and the second group of resources, wherein the co-allocation map comprises at least one of intersecting time frames in which both the first request and the second request may be simultaneously satisfied, and all time frames where available resources exist that satisfy the first request and the second request, and wherein the first type of resource and second type of resource span at least one computing device

of the plurality of networked computing devices, wherein each computing device of the plurality of networked computing devices has a homogeneous processor architecture.

At best the prior arts of record including the newly cited prior art, specifically **Rottoo (U.S. Patent No. 5,933,417)** discloses a system and method for co-allocating resources within a compute environment including the steps of receiving a request for reservation for two type of resources in the compute environment including a plurality of resources, analyzing the constraints associated with the request and identifying the first and second group of resources that satisfied the request, and generating a matrix (map) between the first and the second group of resources that indicated the availabilities of the first and the second group of resources that satisfied the request (see abstract; col. 4, lines 65-67; col. 5, lines 1-3, 59-67; col. 6, lines 9-37; col. 9, line 58 through col. 10, line 65). **Neiman et al (U.S. Publication No. 2003/0154112)** disclose a system and method for resources reservation including the steps of receiving a first request for a reservation for a first type of resource in a compute environment analyzing constraints and guarantees associated with the first request in a compute environment comprising a plurality of networked computing devices, identifying a first group of resources that meet the first request, receiving a second request for a reservation for a second type of resource in a compute environment, analyzing constraints and guarantees associated with the second request in a compute environment comprising a plurality of networked computing devices, identifying a second group of resources that meet the second request, and reserving the resources based on the analyzing and identifying (see abstract; paragraphs [0063], [0084], [0149]).

In addition, neither a reference uncovered that would have provided a basis of evidence for asserting a motivation, nor one of ordinary skilled in the art at the time the invention was

made, knowing the teaching of the prior arts of record would have combined them to arrive at the present invention as recited in the context of independent claims 1, 36, 38, and 40 as a whole.

Thus, claims 1, 36, 38, and 40 are allowed over the prior arts of record.

7. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer N. To whose telephone number is (571) 272-7212. The examiner can normally be reached on M-T 6AM- 3:30 PM, F 6AM- 2:30 PM.

9. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on (571) 272-3756. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

10. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Jennifer N To/
Patent Examiner, AU 2195